

March 25, 1941.

G. H. TERWILLIGER

2,236,042

ORTHODONTIC BRACKET

Filed April 22, 1936

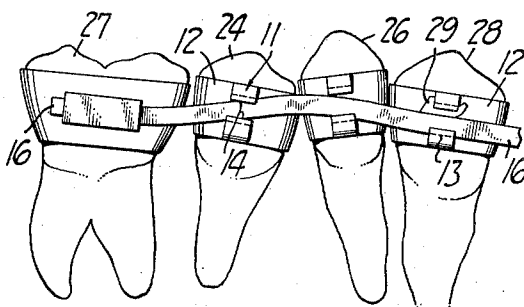


FIG. 1

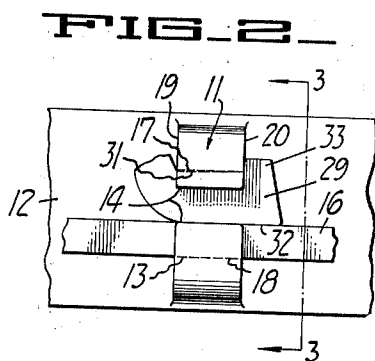


FIG. 3

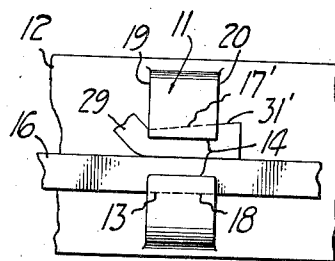
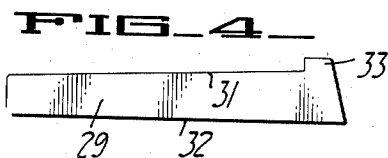
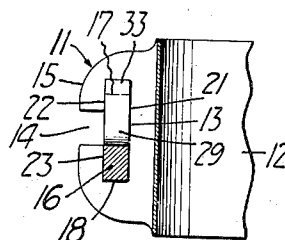


FIG. 5

INVENTOR.

Glendon H. Terwilliger

BY

Joseph B. Gardner

ATTORNEY.

UNITED STATES PATENT OFFICE

2,236,042

ORTHODONTIC BRACKET

Glendon H. Terwilliger, Oakland, Calif.

Application April 22, 1936, Serial No. 75,714

4 Claims. (Cl. 32—14)

The invention relates to orthodontic appliances used for the correction of malocclusion and general orthodontic treatment.

5 An object of the invention is to provide an orthodontic bracket of the character described which, together with the fastening means therefor, will have a considerable length of attachment with and along the arch and be securely clamped to the latter in a manner positively
10 preventing relative rotation of the bracket and arch about an axis transverse of the latter and transverse of the tooth to which the same is applied and thereby afford simply and readily certain tipping and bodily movements of the
15 teeth which have been heretofore accomplished only with a considerably more elaborate mechanism and with difficulty.

Another object of the invention is to provide improved means for holding the orthodontic
20 bracket against movement along the arch after the same has been set in adjusted position.

A further object of the invention is to provide a mechanism of the character described which will admit being placed in the mouth with the least possible interference with the
25 tongue and other tissues and inconvenience to the wearer, which will be stable and maintain substantially constant both the amount and direction of the force exerted by it, and which
30 will in other ways assist and facilitate the treatment of various classes, types and conditions of malocclusion and orthodontia generally.

The invention possesses other objects and features of advantage, some of which, with the
35 foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It
40 is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention as set forth in the claims.

In the accompanying drawing, the several
45 views, and especially Figures 2 to 5 have been considerably enlarged over actual size so as to better show the construction and operation of the various parts. Referring to said drawing:

50 Figure 1 is a perspective view of several adjacent teeth having applied thereto an orthodontic mechanism constructed in accordance with the present invention.

Figure 2 is a front elevation of a part of the apparatus shown in Figure 1;

55 Figure 3 is a sectional view of the apparatus shown in Figure 2 and is taken substantially on the plane of the line 3—3 of Figure 2;

60 Figure 4 is a side elevation of the key pin used in the embodiments of the invention illustrated in Figures 1-3;

Figure 5 is a front elevation of a modified form of the bracket and fastening means.

The orthodontic appliance of the present invention, and as illustrated in the accompanying drawing comprises, a bracket 11 which is
5 fastened at a side thereof to a bracket band 12 which is used for embracing a tooth and is provided with means adjacent its outer side for engaging an arch 16 in the form of the usual
10 wire or ribbon. With reference to Figures 1 to 5, it will be seen that this last named means consists of a transverse, preferably rectangular opening 13 through the bracket and which has
15 a reduced slot portion 14 opening to the outer side 15 of the bracket. Preferably the slot 14 is of a width substantially equal to that of the arch so as to afford the passage of the arch
20 through the slot and into the larger opening 13, the slot 14 being desirably confined to substantially the width of the arch so that with the latter in the opening 13 and once out of alignment
25 with slot 14, the arch will have little, or no, chance to escape from the opening. Of particular importance is the fact that the opening 13 itself is of considerably greater height than
30 the arch so that in the initial stages of treatment of malocclusion, and especially where the teeth are badly inclined, the arch may be extended diagonally through the opening to engage the upper and lower sides 17 and 18 at the
35 opposite ends 19 and 20 of the bracket so as to produce a tilting action on the bracket and the attached teeth. At the same time, the arch will be held against release from the opening
40 by the inner side 21 and the outer side thereof, which is in the form of a pair of shoulders 22 and 23 positioned above and below the slot 14. In this manner a greatly simplified method of
45 straightening the teeth is afforded in that, for the most part, and during the initial stages of treatment, the arch 16 need only be drawn through the openings in the brackets to afford a proper and automatic application of a corrective
50 force moment to the teeth. Such a free arrangement of the arch in the bracket has been particularly illustrated in connection with the teeth 24 and 26 of the assembly shown in Figure 1, wherein the arch is supported on the teeth 27
55 and 28 at the rear and front of the teeth 24 and 26, and is merely drawn through the brackets positioned on these intermediate teeth and sprung slightly to increase the force applied thereto. In this connection, it will be noted that, as the teeth naturally orient themselves in an effort to align the brackets and arch, the teeth will be free insofar as the arch is concerned to make whatever longitudinal movements are necessary to reach a corrected position.

Another important feature made possible by 60

the arrangement of the opening 13 and the slot 14, is the inclusion in the opening 13, in addition to the arch 16 and when desired to rigidly hold the bracket against movement relative to the arch, of a key or pin 29. More particularly the key is positioned in the opening with the length of the key extending generally parallel to and against a longitudinal side of the arch. In this manner, a considerable length of the key engages the arch and effectively prevents any turning of the key and the bracket on the arch along an axis transversely to the latter. It will also be noted, that the opening itself extends generally parallel to the arch and also affords a considerable length of engagement with the arch and thus cooperates most effectively with the key for rigidly holding the bracket against angular displacement relative to the arch. As will be understood the key is particularly used with the appliance either to anchor the arch to spaced teeth, as for example, the tooth 28 shown in Figure 1 during the initial stages of treatment or later when the adjustment of the teeth become much smaller the final positioning of the teeth may be better effected by anchoring each of the teeth to the arch and individually setting each of the teeth.

As will be clear from Figures 1 to 4, the key may be positioned either below or above the arch, whereby in one instance, the arch will be confined by the shoulder 22 and the key by the shoulder 23, and in the other instance, and as here shown, the arch is carried in the lower portion of the opening 13, while the key is positioned in the upper portion of the opening. Preferably the longitudinal sides 31 and 32 of the key are provided with a slight taper so that on insertion into the opening the upper side 31 of the key and the bottom of the arch will be wedged against the top side 17 and the bottom side 18 of the opening. As here illustrated, the bottom portion of the opening 13, as defined behind the shoulder 23, is of a depth sufficient to substantially entirely enclose the arch therein. The key, on the other hand, extends from the top surface of the arch to the top of the opening as above explained, and is inserted into the opening from one of the longitudinal ends thereof. In the embodiment here shown, the key is provided with a head or off-set 33 which is arranged to abut against one of the sides 19 or 20 of the bracket to limit the insertion of the key into the recess and when so positioned, the opposite end of the key extending from the bracket may be bent to an angular position and cut or otherwise foreshortened so as to hold the key against endwise displacement in the opening.

In the form of the invention illustrated in Figure 5, the upper end 17' of the opening in the bracket is tapered to correspond with the side 31' of the key 29, and the pitch of this taper is such that the key will bind when pressed into the recess, and the need for the head 33 used in the first embodiment is dispensed with.

I claim:

1. An orthodontic appliance comprising, a bracket adapted for attachment at its inner side to a bracket band and formed with a longitudinal horizontal slot therethrough opening to the outer side of the bracket, said slot having a vertical enlargement inwardly of said last named side defining a pair of vertically opposed recesses in said slot and adapted to receive an arch-bar in one of said recesses, and a key adapted for mounting in

the other of said recesses against and generally parallel to said arch-bar, said key being provided with an offset adjacent one end for engaging said bracket and being adapted for bending adjacent its other end into an angular relation with respect to said slot.

2. An orthodontic appliance comprising, a bracket adapted for attachment at its inner side to a bracket band and formed with a horizontal longitudinal slot opening to the outer side of said bracket, said slot having a vertical enlargement inwardly of said last named side defining a pair of vertically opposed recesses in said slot and adapted to receive an arch-bar in one of said recesses, and a key adapted for mounting in the other of said recesses against and generally parallel to said arch-bar, said key being provided with an offset adjacent one end for engaging said bracket and being adapted for bending adjacent its other end into an angular relation with respect to said slot and being tapered intermediate its ends to wedge against said arch-bar and slot.

3. An orthodontic bracket adapted for attachment of one side thereof to the exterior side of a tooth embracing band with one dimension of the bracket substantially parallel to the axis of the band and herein denoted as vertical, and another dimension extending circumferentially of the band and herein denoted as horizontal, and a third dimension extending radially of the band and herein denoted as radial, said bracket being formed with a slot therein extending horizontally to the opposite ends of the bracket and radially to the outer side thereof radially opposite to said first side, said slot being formed as viewed in a radial vertical plane with an interior vertical enlargement relative to a reduced portion opening to said outer side, said enlargement and reduced portion each being of substantially rectilinear form in said plane, said slot being adapted to receive an arch-bar extended generally horizontally therethrough, said reduced portion having a vertical dimension approximately equal to but greater than the vertical dimension of said arch-bar and said enlargement having a radial dimension approximately equal to but greater than the radial dimension of said arch-bar whereby said arch-bar may be entered into said slot through said reduced portion in a substantially horizontally extending position of said arch-bar and may be locked in said enlargement when positioned therein in an inclined position to horizontal, said arch-bar in said last named position being operable to engage one or a plurality of the interior surfaces of said enlargement to apply a direct force and/or rotating torque to the bracket.

4. An orthodontic appliance comprising, a bracket adapted for attachment at its inner side to a bracket band and formed with a horizontal longitudinal slot therethrough opening to the outer side of said bracket, said slot having a vertical enlargement inwardly of said last named side defining a pair of vertically opposed recesses in said slot and adapted to receive an arch-bar in one of said recesses, and an elongated key adapted for longitudinal insertion into the other of said recesses against and substantially parallel to said arch-bar to secure said arch-bar in its recess.

GLENDON H. TERWILLIGER.